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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/618,820 | 07/15/2003 | Li-Yi Chen | 0941-0788P | 5921 |

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EXAMINER

HOLTON, STEVEN E

ART UNIT PAPER NUMBER

2673

DATE MAILED: 10/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/618,820 | Applicant(s) CHEN ET AL. | |
| | Examiner Steven E. Holton | Art Unit 2673 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-18 is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/661,289.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

by

DETAILED ACTION

Claim Objections

1. Claims 1, 3, 4, 8, 11, 14 and 17 are objected to because of the following informalities:

Claims 1, 8, and 14 have varying usage of subscripts and regular font when describing equations shown within the claim language. Specifically pairs such as $G_o(t)$ and $G_o(t)$, and $V_o(t)$ and $V_o(t)$. The Examiner recommends correcting the usage within the claims to be consistent. As currently written the claims are understandable, but could be considered to have lack of antecedent issues with the varying term usage. Further claims 1 and 8 have a minor misuse of 'an' rather than 'a' on lines 17 and 10 respectively, the incorrect phrase is "determining an dynamic gray level" where it should be "determining a dynamic gray level".

Claims 3 and 4 are objected to because of the use of $G_o(n)$ and $G_o(n-1)$. The Examiner notes that these terms would be better stated as $G_o(t)$ and $G_o(t-1)$ to agree with the terms used in claim 1. This would make claims 3 and 4 similar to claims 9 and 10, and 15 and 16.

Claims 11 and 17 are objected to because of the difference between these claims and claim 6 on altering either ODV or $G_d(t)$ according to an operating temperature. The Examiner notes that both values are listed as being able to be altered in response to the temperature (page 10, lines 15-23), but that the emphasis seems to be that ODV can be changed and this change will also alter the values of $G_d(n)$ and $V_d(t)$ because of the associations through the calculations. Further, claims 12 and 18

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reference ODV rather than $G_d(n)$ which seems to indicate that ODV was intended in claims 11 and 17.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 and 8 recite the limitation "forward pixel" in lines 22 and 21 respectively. There is insufficient antecedent basis for this limitation in the claim. The claims do recite having 'a pixel' but fail to further limit the pixel to be a 'forward pixel'. Further, a 'forward pixel' lacks definition as to why the pixel is forward rather than backward. What makes the pixel forward rather than backward or sideways? Is the 'forward pixel' different from the 'a pixel'? The Examiner notes that because the issue is raised in the independent claims all dependent claims of claim 1 and 8 possess the same antecedent issue and are also rejected under 35 USC 112, 2nd paragraph.

Allowable Subject Matter

3. Claims 14-18 are allowed.

Claims 1 and 8 and their dependent claims would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

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The following is a statement of reasons for the indication of allowable subject matter:

The present invention is directed to a method for driving a liquid crystal display device to change gray scale levels within a single frame. Each independent claim identifies the uniquely distinct features "determining an optimized driving voltage $V_d(t)$, according to an equation $V_d(t) = V_o(t-1) + ODV$ " and "determining an dynamic gray level data $G_d(n)$ according to an equation $V_d(t) = a \times G_d(t)^3 + b \times G_d(t)^2 + c \times G_d(t) + d$ ". The closest prior art, Usui et al. (USPN: 5347294) and Lee et al. (USPgPub: 2004/0189568) disclose methods of driving liquid crystal displays and providing correction voltages to change display characteristics, but lack the specific equations used by the applicant, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Waters (USPN: 4964290) teaches methods to produce a compensation voltage for time modulation gray-scale.

Fuse et al. (USPN: 5089812) teaches a method of increasing contrast of a liquid crystal display panel.

Kuiryama et al. (USPN: 5956014) teaches a brightness control for a plasma display.

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Ueno et al. (USPN: 6320562) teaches a compensation circuit for a liquid crystal display.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven E. Holton
September 22, 2005
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VIJAY SHANKAR
PRIMARY EXAMINER